

Skylab Medical Tests Scheduled here in '72

Three men will spend up to 56 days in an altitude test chamber early next year at MSC to obtain medical data and evaluate medical experiment equipment for the Skylab Program, scheduled for 1973.

The test will closely simulate Skylab mission conditions so that differences observed later during actual flight may be attributed to causes such as weightlessness, which cannot be simulated in the chamber. An altitude chamber is required to provide a low-pressure breathing atmosphere such as the astronauts have in space.

The primary goal of the test is to obtain and evaluate baseline medical data from those medical experiments which reflect the effects of the Skylab environment.

There are 16 medical experiments scheduled for Skylab involving, among others, studies of the cardiovascular system and the expenditure of energy to do measured work, and food and nutritional investigations.

Secondary objectives of the test include the evaluation of selected items of experiment equipment, medical experiment operating procedures, and means of handling experiment data. In addition, the test will aid in training the ground-based medical operations team for their participation during actual space flight.

Although test team members have not yet been chosen, members of the astronaut group are being considered. While the primary emphasis of this study is directed at obtaining medical data, the test crew will also engage in a full schedule of activities involving work, eating, leisure, recreation, and sleep.

During the work portion of the day, the crew will conduct experiments, monitor the environment, evaluate the operation of experiments and perform allied test functions. During off-duty hours,

the crew can select from such varied onboard recreational facilities as television, tape recorders, chess, checkers, playing cards, sketching materials, exercise devices, books or writing materials.

A Medical Safety Officer will have the authority to remove test team members from the chamber or to abort the test for medical emergency reasons.

The test will be conducted in Building 7 in a 20-foot diameter altitude chamber which was used in both the Gemini and Apollo programs. The chamber is being modified to resemble the crew quarters area of the Skylab Workshop and will simulate the flight environmental conditions (70% oxygen, 30% nitrogen at a total pressure of 5 psia). The temperature will remain within 67 to 78 degrees Fahrenheit. Humidity will range from 45 to 60 percent.

The crew will consume Skylab type food and water. Communications between the crew and the ground control will be similar to Skylab mission communications which will be augmented by closed circuit TV during the medical experiments.

(See SKYLAB page 2)

AFGE Announces Election Results

The May 13 American Federation of Government Employees (AFGE) Local 2284 election saw over 65 percent of the membership voting.

Leslie A. Ghetzler was elected president of the local, defeating candidates David N. Holman, the former president, and Robert E. Thrower.

Other officers elected were Jacqueline Gegan, 1st Vice-President; Albert Jackson, 2nd Vice-President; Curtis Vetter, 3rd Vice-

(See UNION page 2)

ROUNDUP

NASA MANNED SPACECRAFT CENTER

HOUSTON, TEXAS



VOL. 10 NO. 14

MAY 21, 1971



JAMAICA FROM 5,000 FEET—Historic Fort Augusta is visible to the right in this photograph, one of several hundred taken by NASA's Earth Survey Aircraft #2 during the recent flights over Jamaica. Fort Augusta is west of Kingston, the capital and major city of the island.

First extensive mapping mission of Jamaica is labeled as successful

The recently conducted United Nations-sponsored resources survey of the island of Jamaica was a cooperative effort in which scores of engineers and scientists from Jamaica, the United States, and the United Nations worked together on the ground and in the air to acquire photographic and thermal imagery of the Caribbean island.

The mission, in which personnel from various elements of MSC participated, has been described as one of the most complete and efficient jobs ever accomplished in air and ground data gathering. Individuals from the Engineering and Development, Science and Ap-

plications, Center Operations, and Flight Crew Operations Directorates took part in the two-week mission, April 18 through 30.

The purpose of the program is to provide the Government of Jamaica and the United Nations Food and Agriculture Organization with aircraft-gathered imagery for assessing the island's natural resources (forestry and timber, mineralogy, etc.). Particular emphasis was placed on water resources management.

Government officials of Jamaica and members taking part in the U.N. Water Resources Project want to learn more about the island's water supply. Although the tropical island has an average rainfall of 200 inches, much of the water in the mountain rivers never reaches the reservoirs of Jamaica's cities. It is believed that submarine springs carry a portion of the water offshore into the Caribbean.

John Williams, Jamaica Geological Survey, said, "This particular problem is what led to the initiation of the request for the NASA earth resources aircraft."

Williams expressed hope that the aircraft-gathered data might contribute toward locating the submarine springs and identifying structures and lineations that may control the subsurface movement of ground water.

The NASA aircraft, a modified C-130, flew ten flights out of the Palisades Airport in Kingston, Jamaica.

Ninety-five percent of the data acquisition objectives were achieved, according to Allen Watkins, manager of the Earth Observations Aircraft Program (EOAP) in the

Science and Applications Directorate.

Leon Ballinger of EOAP was manager of the mission, and Wayne Eaton, also of EOAP, coordinated the ground activities in support of the mission.

An old Army radio shack at the Jamaica Defense Force's Up-park Camp in Kingston served as the mission control center, which maintained contact with the MSC aircraft and the more than 15 separate field teams spread across the island.

The field teams, in gathering the ground-truth, moved about the island on an hourly basis in order to be in position when the MSC aircraft flew over. Some of the ground teams were located along the island's rivers (Rio Grande, Black, Rio Minho, Roaring, and Montego), as well as in dense jungle areas and along the coast.

Several scuba divers, students from one of the island's diving schools, worked in the waters of historic Discovery Bay, where Christopher Columbus landed in 1492. They gathered water temperatures to compare with the data recorded by the aircraft's Precision Radiation Thermometer (PRT-5) and RS-14 thermal imagery scanner.

Allen Watkins described the ground-truth operation as "the most complete ground truthing that the aircraft program has ever experienced." He went on to say that the operation "should substantially increase the value of the remote sensing data."

The data gathered during the

(See JAMAICA page 4)



THAT FACE BEHIND THE SUNGLASSES LOOKS AWFULLY FAMILIAR! — Stan Faber (left) of Flight Crew Operations explains features of one of the astronaut training facilities to singer Andy Williams (as if you hadn't guessed!) and to Mrs. Doug Sanders, wife of the well-known professional golfer. Williams was in Houston for the recent golf tournament at Champions.



Just \$3.75 per pay period can start you on the road to wise investment

The 1971 NASA Savings Bond Campaign, which began on May 10, is now in full swing at MSC. The goal this year is to enroll all employees in the Savings Bond payroll savings plan.

As MSC Director Robert R. Gilruth pointed out in a recent

Note on Calendar: May 26, June 2

MSC's "Zero In on Safety in '71" campaign will feature two special programs within the next two weeks.

On Wednesday, May 26, Charles Nurse of the Union Wire Rope Company will demonstrate and discuss safety in handling wire rope slings and cables. The program will begin at 2:30 p.m. in Building 32, room 150.

On Wednesday, June 2, the Building One Auditorium will

letter to employees, "the annual bond drive is unique—you are not being asked to contribute anything, but rather to participate in a savings program which will benefit you."

All employees not presently enrolled in the payroll savings plan will be contacted by their division representative and given an opportunity to enroll.

Employees already taking part in the savings plan are encouraged to increase their present allotment.

Take stock in America. Buy U.S. Savings Bonds!

be the site of a presentation by Tom Logan, a reptile expert from the Houston Zoo. The program scheduled to begin at 2:00 p.m., will include both a lecture on the poisonous snakes native to Texas and a display of live specimens.

Coming soon: The Pin Oak Charity Horse Show

The annual Pin Oak Charity Horse Show, benefiting Texas Children's Hospital, is scheduled for Monday, May 31 through Sunday, June 6.

Texas Children's Hospital is international in its functioning, having treated children with rare diseases from all over the world. It has gained recognition as a ranking institution for the treatment of complicated children's diseases and is one of the nation's leading centers for heart surgery.

Since 1947, the Houston Horse Show Association, which sponsors the Pin Oak Horse Show, has dedicated the total proceeds from tickets sales for the show to the children's hospital.

The money was first used toward building the hospital and is now used to help offset the operating deficit. Proceeds to date have totaled over \$2 million. This year's goal is \$185,000.

The Show will take place at Pin Oak Stables on Post Oak Road, just north of Bellaire. Performances are each evening at 7:30, with matinees on Saturday, June 5 at 1:15 p.m. and Sunday, June 6 at 1:45 p.m.

For additional information or for ticket requests, contact Elaine Stemerick at extension 2341 or 2441.

Skylab Tests are Set for Center

(Continued from page 1)

Joseph R. Trombley has been assigned as Test Manager for the Engineering and Development Directorate's part in the simulation. William H. Bush is Test Manager for the Medical Research and Operations Directorate, and Dr. William H. Shumate will be Medical Experiments Coordinator.

Union election

(Continued from page 1)

President; Herman Fisher, Chief Steward; R. L. Clay, Sergeant-at-arms; John T. Weber, Secretary-Treasurer; and Alice Robinson, Secretary.

Local 2284 represents approximately 3,000 employees at MSC.

Apollo 15 Crew to perform 5 EVA's

Apollo 15 astronauts David R. Scott, James B. Irwin, and Alfred M. Worden are scheduled to don space suits for work in the vacuum of space five times during the next lunar exploration mission.

The five extravehicular activities (EVA) will total more than 21 hours, exceeding the combined EVA time of all previous Apollo flights.

Apollo 15 is scheduled for launch from the Kennedy Space Center on July 26.



PROTECTIVE GEAR — John D. Piwonka (center), Brown & Root-Northrup, and Paul H. Anderson (right), Space Environment Test Division, were instrumental in developing the solar protective garment worn (left) by W. J. Fitzpatrick of B & R-N.

MSC-Contractor effort produces a New solar protective garment

The Zero-In on Safety '71 program calls attention to some of the safety precautions utilized in operations in the Space Environment Test Division, and achieved through Government-Contractor teamwork.

The Space Environment Simulation Laboratory's thermal vacuum chambers have solar simulation capabilities. The simulators presently used are carbon rod burning devices that simulate the sun's collimated rays and their intensities on a test object without the 100 miles of atmospheric diffusion experienced on earth. The conditions simulated approximate the solar energy contacting a spacecraft and astronauts in space.

There is a need to take spectral measurements to determine light uniformities and intensities; therefore, some means had to be devised which would safely allow Brown & Root-Northrup technicians to work directly in these solar beams.

The conditions faced in working in these collimated beams are comparable to working next to an electric arc welder with all of the heat and light energies focused on the worker. Chamber floor temperatures frequently surpass 100 degrees Fahrenheit. The solar beam is loaded with ultraviolet radiation which can cause eye damage and possibly degrees of blindness. There was an urgent requirement to protect the worker by providing cooling from the excessive temperatures and protection from possible eye and skin burns.

Discussions among representatives from the Space Environment Test Division, Crew Systems Division, and Brown & Root-Northrup revealed that aluminized mylar would afford good ultraviolet protection because its transmittance factor is quite low. It was, therefore, decided to fabricate a garment out of the mylar, with nomex, a highly fire resistant nylon product, used as the inner and outer covering.

The solar protective garment, nicknamed "the solar smock," is constructed of a layer of aluminized mylar sandwiched between two layers of white nomex fabric. It was fabricated under the direction of Dr. Matthew I. Radnofsky, Crew Systems Division.

To reduce effects of the high temperature under simulated solar conditions, a vortex tube-cooling garment assembly is worn under the smock to distribute cooling air over the wearer's body.

A headdress integrates an eye and face tinted bubble mask to guard against heat and ultraviolet burns. Cooling is also afforded the head and face from the vortex tube via a cooling tube from a T-connection at the waist.

Filtered building instrument air is fed into the vortex tube, and the hot air is exhausted at the bottom of the tube. The cool air is distributed through the tubes and relaxed through holes in the tubes onto the worker's body.

Completing the protective gear are gloves. Long elasticized smock sleeves also afford wrist protection when the arms are extended.



PAST PRESIDENTS FETED—The MSC Federal Credit Union Board of Directors honored past presidents Roy C. Aldridge and Burney H. Goodwin at a luncheon on April 14. Aldridge, the first president of the Credit Union, held office from 1961 to 1966. Goodwin's term was from 1966 to 1971. Pictured (l. to r.) here are Goodwin; Aldridge; Peggy Giacometto, manager of the Credit Union; Harold J. Ferrese, current president; and Jim DeMuth, treasurer.

ROUNDUP

NASA MANNED SPACECRAFT CENTER HOUSTON, TEXAS

The **Roundup** is an official publication of the National Aeronautics and Space Administration Manned Spacecraft Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for MSC employees.

Editorial Staff: Sydni Shollenberger, A. "Pat" Patnesky.

EAA News Notes & Announcements

LaMere elected

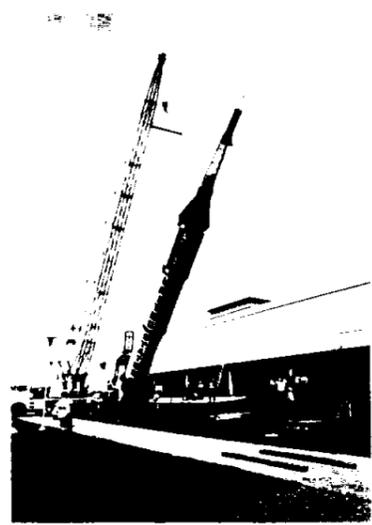
At the General Assembly meeting of the Employees Activities Association on May 11, Robert F. LaMere of the Institutional Resources and Procurement Division was elected as president of the EAA. He will serve in that office for the remainder of this year.

Bob is married and has two children. His wife Sally is a former editor of the ROUNDUP.

\$ \$ Planners reminded

Employees who have signed up to attend the free financial planning seminars conducted by Robert Bye Associates of Houston are reminded that the dates and times are Tuesday, May 25 and Thursday, May 27 from 7:00 p.m. to

**"Hold on now
Don't let it slip . . .**



Navy to cachet Apollo 15 Covers

Manned Spacecraft Recovery Forces of the U.S. Navy will provide commemorative cachet and cancellation services for the upcoming Apollo 15 lunar mission.

Philatelic coordinators designated for the Atlantic and Pacific Fleet Recovery Forces (Task Force 140 and 130) will receive all such covers and make distribution to the assigned recovery ships.

To permit adequate time for handling of the covers, stamp collectors should send pre-stamped, self-addressed envelopes to the appropriate coordinator at least three weeks prior to the scheduled launch date for the mission. For the scheduled July 26 launch of Apollo 15, covers should be received by the Navy prior to July 2.

In accordance with U.S. Postal regulations, only U.S. postage may be used on the covers submitted. Postage stamps of other countries or of the United Nations cannot be used. Cash, money orders, or checks in lieu of postage cannot be accepted.

Collectors should furnish standard size covers, 3 7/8 inches by 6 1/2 inches, with a filler inserted to simplify handling.

Because of the popularity of the cancellation service and the limited postal facilities on recovery ships,

9:15 p.m. at the Webster Intermediate School.

Magic, Anyone?

Today is the last day tickets will be sold in the MSC cafeterias for the Texas Association of Magicians special magic show on Saturday, September 4.

The Association, holding its annual convention in the Astroworld complex, has made available to MSC employees and contractors 1300 tickets, selling for \$1.50 each. The regular price is \$3.00.

Ed Campagna, extension 4901, can supply additional information.

Please Give

All healthy MSC employees are encouraged to participate in the upcoming blood drive sponsored by the MSC Blood Bank.

A bloodmobile will visit the Center on Wednesday and Thursday, June 2 and 3, at Building 8 (Dispensary) from 8:00 a.m. to 3:00 p.m.

Call Lester Wynn at extension 6124 or Barbara Freeman, 3583, for an appointment.

Moon Trotters win

The newly-formed EAA ladies' volleyball league held its first tournament on Saturday, May 15 at Ellington Air Force Base.

The Moon Trotters, who played seven games, winning six and losing one, defeated the Rebels in the finals, taking two out of three games.

Other teams in the league include the Wild Bunch, the Apollos, and the 2578's.

each recovery force coordinator will accept a maximum of two covers from an individual collector.

When more than the authorized number of covers are received, they will be returned unprocessed.

Addresses for the Atlantic and Pacific area coordinators are: Apollo 15 Covers, Task Force 140, Naval Air Station, Norfolk, Virginia 23511, and Chief-in-Charge (Apollo 15), Task Force 130, Navy Terminal Post Office, Fleet Post Office, San Francisco, California 96610.

Phew! Made it."



A Redstone rocket topped by the mockup of a Mercury capsule, seen here being set up, is now on permanent display behind Building 1 Auditorium.



THE WINNERS—Some of MSC's slow pitch softball aficionados got together to form a team called the "LRD Blazers." The team participated in a 21-game double elimination tournament sponsored by the Houston Recreation Department and won five games, emerging as the undisputed "champeens." Pictured here are (front row, l. to r.) Ron Epps, Nat Hardee, Mel Richmond (coach), Randy Stone, and Dale Moore. In the back row (l. to r.) are Mike Collins, Lee Norbratten, Jim Axley, and Jim Larey. Missing from the photo are Jack Boykin, Terry Neal, Dale Frost, and Phil Shannahan.

Retirement Plans Beckon Eleven MSC "Old Timers"

Between April 30 and May 31 of this year, eleven MSC employees will have brought to a successful close their years of Government service.

In some cases, golf clubs awaiting polishing, beaches await exploration, and in others, a brand new career lies ahead.

Annie S. Hanson, for example, is looking forward to selling antiques for fun and profit. A clerk-typist in the Structures and Mechanics Division, she has been with the Government for ten years, nine years of which were at MSC.

Harold I. Johnson of the Crew Training and Simulation Division, retiring after 30 years of service, came to work for the National Advisory Committee for Aeronautics (NACA) in July 1941. He is an aerospace engineer.

Nel S. Shaw, a secretary in the Program Procurement Division at MSC-Downey, will leave Government service after 15 years. She has been with NASA for the past nine years.

G. Wightman "Whitey" Bell, also at MSC-Downey, is a space system control specialist. He has 30 years of service to his credit. Prior to joining NASA in 1962, he had been with the Air Force.

Robert D. Kriehn, an electrical engineering technician with the Technical Services Division, will retire with 28 years of service. He came to MSC from the Air Force in 1964.

Myra W. Sherman is a secretary in the Telemetry Communications Systems Division. She has been with NASA for the past eight years and will retire after over 25 years of Government employment.

Sanford M. "Sandy" Ullman has left the Federal Government after 23 years of service. A protocol specialist on the Public Affairs staff at MSC, he joined NASA in 1966 after lengthy service with the Army. He and his family plan a move to Washington, D. C., where a new job awaits his arrival.

Robert L. Plummer, a quality assurance specialist in the Reliability

and Quality Assurance Office, has been with the Government for 21 years. He has been at MSC for the past seven years and prior to joining NASA, worked for both the Army and Air Force.

Marvale Y. Stark began her career with the Government over 25 years ago. An accounts maintenance clerk in the Financial Management Division, she came to MSC in 1963 after a number of years working for the Department of the Navy.

Marion C. Owens, a contract specialist in the Institutional Re-

sources and Procurement Division, began his Government service in 1951. He joined NASA in 1959 after having served in the military for 8 years.

David C. Spain came to MSC in 1963. His Federal service career began in 1936 when he joined the Army. He continued to work for the Department of the Army until 1963. A supervisory printing specialist in the Management Services Division before his retirement, he is now residing in Ft. Lauderdale, Florida.

Good luck and good wishes to all the retirees.

CONGRATULATIONS ARE IN ORDER



Donald K. Slayton (right), Director of Flight Crew Operations, presents service awards to (l. to r.) Antonio M. Patino, Aircraft Operations (15 years); John B. Slight, Flight Crew Integration Division (20 years); and Jane Braun, Aircraft Operations (15 years).



Recipients of Outstanding Performance Reports for 1970 in the Center Operations Directorate are, front row (l. to r.), John W. Farrell, John H. Allen, Sr.; Elsie M. Easley, Dorothy A. Dunham, Lettie B. Reed, Helen H. Ragsdale, and William A. Wohnhaas. In the back row (l. to r.) are Roman Z. Petrowski, Thomas E. Davis, Charles S. Allton, Harry L. Hawkins, Roy L. Magin, Jr.; Thomas F. Kirkland, and William A. Bowles. Absent from the picture is Mary Duoto.



ANYONE HAVE THE CORRECT TIME?—With a rubidium-87 atomic space clock which would be off by less than a second in 50 years, no one should ever be at a loss for the right time. Barbara Gooding and David Cree of the Information Systems Division check Barbara's wristwatch against a digital time display driven by the 5x5x18-inch device. The clock is under development for future long-duration space missions.

Center develops new Space Clock

The Mad Hatter (of "Alice in Wonderland" fame) would never be late to his tea party if he had a clock like the one under development in MSC's Information System Division laboratory. The timing device is so accurate that it would be off by only one second after running 50 years.

Lacking a mainspring or pendulum, the experimental clock uses the resonant frequency characteristics of the rubidium 87 atom to generate the basic timing pulse. The technique of exciting electrons of the rubidium atom is called "optical pumping." The electrons are induced to resonate at a known frequency and thus form the basis for keeping very accurate time.

For the technically minded, the process works as follows: rubidium 87 gas in a glass cell is illuminated by a lamp filled with rubidium 87, and the light in turn passes through a filter cell containing rubidium 85. The filter cell passes only a selected bandwidth of light to raise the rubidium atoms in the gas cell to a higher energy level, and thereby extract light energy from the beam. Microwave energy from a quartz crystal oscillator-multiplier drives the outer electron of the rubidium atom to a lower energy level. Variations in microwave frequency affect the net amount of light reaching a photocell, and the rubidium atoms are "pumped" to a corresponding energy level.

The detected modulated microwave signal, from the photocell, drives a synchronous detector which keeps the crystal oscillator at the atomic resonance frequency. The crystal oscillator in turn drives a frequency synthesizer and time code generators for feeding timing pulses to spacecraft systems and timekeeping displays.

The Prototype space clock's accuracy has been measured against two laboratory hydrogen maser frequency standards in a test that ran for 340 days. The clock was also tested in simulated space conditions of temperature and launch vibrations.

Weighing about 19 pounds, the timing device is packed in a box 5x5x18 inches, operates on 28 volts DC, and draws 18 watts.

Jamaica mission

(Continued from page 1)
ten flights is now being processed and prepared for limited analysis. Current plans call for key Jamaican and U.N. personnel to visit MSC in late June for five days of lectures and detailed review of the data.

In describing the mission, Watkins said, "It was well planned and carried out, and NASA has an operations crew and complement of personnel of which to be deeply proud."

Kegler results told

The Jimmy Warren Memorial Bowling League season has ended for this year. The teams will resume play on Thursday, September 2.

The Pin Pounders were first this season with a win-loss record of 79-57. The Bit Pickers were second with 75-61, and the Achievers were third with 72-64.

The remaining nine teams placed as follows: Alley Oops, 72-64; Chokers, 70-66; Mixers, 66-70; Hexes, 66-70; Roadrunners, 64-72; Real Timers, 64-72; Fabricators, 67½-68; Strikers, 62½-73½; and Blitzers, 58-78.

Individual honors went to Al Spivey, most improved average (+15); Al Shields; high game of 294 (with handicap); Nick Jevas, high series of 709; and Hal Erickson, high average, 184.

10 YEARS AGO—On May 25, President John Kennedy said, in a statement before the Congress, "I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth. No single space project in this period will be more impressive to mankind . . ."

Roundup Swap-Shop

(Deadline for Swap-Shop classified ads is Thursday of the week preceding Roundup publication date. Ads are limited to MSC civil service employees and assigned military personnel. Maximum length is 20 words, including name, office code and home telephone number. Send ads, typed or legibly written, to Roundup Editor, AP3)

MISCELLANEOUS

Ludwig snare drum and stand, xln cndn, \$50. Hoskins, 483-2831.
Spanish style dinette set, 6 chairs, \$35. Bedroom set: bookcase headboard, dresser, chest, mattresses, \$75. Hamner, 534-4175.
Wards foam rubber camper mattress, \$10. Wards carpet sweeper, \$6. 472-8208.
New World Engines: four channel digital R/C receiver, transmitter, (two servos), flight pack and charger, \$140. Kubicki, 471-3174.
K & E slide rule, \$25; B-flat clarinet, \$70; travel (folding) suitcase, \$8; Encyclopedia Britannica, \$125; briefcase, \$3. Glassburn, 932-4682.
Start the summer right. Join Sunmeadow Golf Club, just \$150. Taylor, HU 2-1023 after 6:00 p.m.
Deluxe jogging machine, best quality, distance counter. Cost new \$135, used 1 month, sell for \$95. Smith, 877-1111.
Recliner, Mediterranean, wood trim, vinyl upholstery, 4 yrs. old, \$50. 471-4844.
Singer's best straight stitch portable touch and sew sewing machine, automatic bobbin winder, 1½ yrs. old. Perfect. Gravett, 932-5241.
Metal desk and swivel chair, conference chairs, wooden "L" desk, other misc office items. Krisberg, 483-2441.
Aerobatic flying club associate memberships available, Stearman AT-G. Mansfield, 723-4598.
International "Angelique" silverware, service for 8, used several months, retail \$675. Make offer. Parker, 591-2710.
Sears model 779 heavy duty spinning reel w/Hurricane model 248 BK, 9 ft. surf spinning rod, \$18. Price, 471-3314.
Sears VW cartop luggage carrier, enclosed, \$15. Rosen, (Alvin) 585-2430.
Contemporary dining table w/four chairs, xln cndn, \$75. Grisson, 932-4206.
Remington model 870 "Wingmaster" 12 ga pump shotgun w/polychoke. Pre-1964 model in perfect shape. Morrison, 946-7239.
Hollow body Kay electric guitar, amp and case, \$100. Daniel, 935-6555.
Beautiful mahogany dining rm set, 6 chairs, extra leaves, \$250. Mahogany china cabinet, \$150; mahogany buffet, \$125. 649-2569.
Beautiful antique clock, \$85; carved Oriental chest, \$200; hand-carved teakwood screen, work of art, \$350; Oriental desk, soap stone and pearl inlay, \$350. 649-2569.
Complete king size bed, good cndn, w/sheets, spread, \$145. Pechek, 944-6012.
Complete ham station: Hallicrafters HT-40 xmitter and SX-140 rcvr; 6 & 2 mtr VFO; electronic keyer, ant rotor, accessories, \$200. Staresinich, 932-3607.
Stereo components: Harmon Kardon Citation Series, tuner, control center, power amp, Garrard chngr, empire turntable w/ADC-1 cartridge, prof tape deck (10" reels), tube caddy w/TV tubes. Audio test equip (Heathkit) TV alignment generator hi-fi records, 10" reels of mag tape. Lang, 591-3907.
New set of woods (1, 3, 4, and 5). North Western - Ultimates. Retail \$104, sell for \$82.50. Lee, Dickinson, 534-6772.
15,000 BTU window air conditioner, less than 1 yr. old, used 4 months. Fulkerson, 667-1828.
Trailer, 2-wheel, enclosed, new rubber, lights, ideal for tent camping, \$215. See corner, El Dorado & Diana, Clear Lake City. Fuller, 448-3985.
Winnebago camper shell, insulated construction, like new. Sliding screened windows, interior paneled, for ½-ton pickup 1970 model, \$249. Fuller, 488-3985.
Two blond human hair, hand-tied wigs and one blond fall. McCarty, 623-4893.
New dbl mattress/springs/frame, \$75; 3 lamps, ea \$15; early American end table, \$40; avocado green sofa, durable, \$90; baby bed & Mattress, \$15. Deans, 488-4009 after 5:00 p.m.
RCA Whirlpool refrigerator, 15 cu. ft., white, \$75; Harmony steel string guitar, \$25. Redding, 932-2077.
Rolleiflex camera, 120 mm film, f3.5 Xenon lens, \$60 Lipovsky, 488-2293.
Johnson 3 HP outboard motor in perfect cndn, \$65. Lipovsky, 877-4288.
Camper type gas/electric refrigerator, Norcold 2.5 cu ft, xln service and cndn. Bought a bigger one. Irwin, 591-3097.
Frigidaire clothes dryer, good cndn, \$40. Speed Queen washer, needs minor repairs, \$15. Pittman, 488-1243.
Decorate your gas light with a personalized address sign professionally made, \$9.95. Davis, 869-1212 or 681-3963.
3-piece curved sectional, \$25; gas logs, \$30; B/W portable TV, \$20. Davis, 869-1212 or 681-3963.
Lawn mower, like new, used one summer, 21", 3½ HP Briggs, \$25. Rodman, 932-2897.
Gabinelli, 120 bass accordion, xln cndn, recently tuned by J. Gabinelli, w/case, music, stand, \$350. Newlin, 481-2121.
35 HP Evinrude, all electric w/tank, controls battery case, etc., very good cndn, \$250. Newlin, 481-2121

Wedding dress, white French silk-faced satin, embroidered Alencon lace w/seed pearls, size 10-11, \$175. Rice, 944-3899.

Smith-Corona electric typewriter, Coronet Electric 10, 2 months old, great cndn, pica type, w/carrying case. Dollar, 331-4606

Mini-Kota 3 speed electric trolling motor, model UWR, xln cndn, 1 yr old, \$55. Price, 471-3314.

Remington 552 BDL automatic .22 rifle, xln cndn, \$45. Price, 471-3314.

Boat top from 16' Silverline, fits most 16-17' boats. Heavy vinyl, in perfect cndn, never used, \$30. Brizzolara, 591-2509.

Three wheels w/good tires for Volkswagen, wide 5 lug, 4 ply; 2 Firestones, 600 x 15; 1 Mohawk, nylon, 685 x 15, \$7.50 each. Morton, 946-4752.

Clear Lake Country Club membership. Reid, 488-3187.

Smith-Corona adding machine, like new, \$45. Lillpop, 483-3111.

23" B/W Philco TV, 1963 model, \$25. 944-5498 after 5:00 p.m.

VEHICLES

65 Honda 305, low mileage, good cndn, 2 helmets, maintenance handbook. Guess, 649-5092.

67 GTO, loaded, any reasonable offer. Larsen, 488-2893, evenings.

65 Chevy pickup, 6 cyl, LWB, Fleetside, radio, heater, w/camper, \$950. Will sell w/out camper. Krchnak, 485-2355.

65 Olds 88, low mileage, one owner, power steering, factory air, \$800. Starnes, 488-6789.

65 Chevrolet BelAire 4-dr, 283, automatic, factory air, runs good, \$500. Brainard, 686-2997.

70 Opel GT, blue w/white interior, xln cndn. Spaeth, 944-3170 after 5:00 p.m.

70 Suzuki 90 cc, Trail/Street, 3600 miles, xln cndn, \$200. Bumper racks, \$12.50. Edwards, 483-3688.

68 VW bus, good cndn, air, radio, heater, \$1695. Bouillion, 482-2091 or 482-7642.

70 Honda Scrambler, K3-CL, red, xln cndn, 2 full helmets, \$875. Hardy, 471-1436 after 4:30 p.m.

64 Valiant, hard top, V-8, A/C, radio, heater, runs good, \$200. Zill, 932-4265.

65 Ford Galaxie 500, 2 dr HT, V-8, A/T, A/C, AM, vinyl interior, good tires, \$350. 877-1147 after 5:30 p.m.

69 Buick 4 dr Special Delux, power brakes, air. Kirby, 946-4395.

63 Plymouth Valiant, 4-dr sedan, standard, trans, xln cndn, never a problem, only 22,000 miles, \$525. Brizzolara, 591-2509.

Honda 50 cc minibike, \$170. Leonard, 944-4997.

Motorcycle, Bridgeport 350, 3 yrs old, 3,000 mi, clean, xln cndn, good tires, ½ price. Brewer, 472-0245.

65 Corvair, sports coupe, air, auto, radial tires, tuned exhaust, \$500. Gatlin, 932-3969.

68 Dart, 225 slant 6, A/C, power steering, automatic, good gas mileage, 27,000 mi, new teacher's first car. McGaughey, 932-7296.

69 VW 19,000 mi, \$1,250. Lang, 591-3907.

65 Comet Caliente, 4 dr, AT, AC, PS, PB, 289 V-8, \$775. (April NADA retail \$875). Waltz, 591-2286.

66 Malibu 4-dr hardtop, 327/pwr glide, factory air, power steering, radio, xln cndn, \$1050. Jones, 944-2124.

67 Rambler station wagon, xln cndn, fully equipped. Mansfield, 944-5473.

66 Pontiac Ventura, 2 dr hdt, factory air, auto transmission, power brakes & steering, good tires, clean, \$875. Fleming, 877-1193.

64 Jaguar XKE, removable hard top, canvas top, 2 new tires, \$2250. Humphrey, 932-5836.

67 Mustang, V-8, A/C, auto, radio. Clean. 65 Dodge, V-8, A/C, auto, radio, PS. Lilly, 877-1198.

69 Mustang, 6 cyl, standard transmission, only 28,000 miles, \$1300. Baker, Dickinson 534-5474.

BOATS

14' Glasspar w/top, 40 hp Evinrude Electric. S/W Tilt trailer, \$695. Scarlett, 1-932-3414.

Dolphin Sr. sailboat w/icebox and licensed trailer, \$475. Bentley, 591-3001.

Snipe sailboat w/dacron sails, galvanized trailer, 3.4 hp motor, \$675 or \$625 w/out motor whittle. 932-5239.

15' Lapstrake wooden boat w/ windshield, foam seats and trailer, \$150. Newlin, 481-2121.

10' sailboat w/no sails, \$100. Larsen, 488-2893, evenings.

Sailboat, snipe class, xln cndn, w/trailer, \$900. 10' Wards aluminum boat, \$45. Holzaepfel, 483-4401.

REAL ESTATE & RENTALS

Sale or lease, \$220, all brick 3-2-2, detached garage, central air/heat, built-ins, League City. Scarlett, 1-932-3414.

Secluded cabin deep in Sam Houston Nat'l Forest, for lease by day or week. Ideal for hunting or just getting away. Leonard, 944-4997.

10 x 56 mobile home w/ 8 x 10 add-a-room, carpet, A/C, 2 storage bldgs, priced to sell. Ruple, 481-3927.

Beach lot on Sea Isle. Bulkheaded and ready for building. 120' facing Gulf, 65' deep. Lilly, 877-1198.

100 x 200' wooded lot (large trees) in Dickinson, Oak Hollow Section 2. Middleton, 482-1053 after 5:00 p.m.

Pasadena, 5-2-2, central air/heat, carpet and drapes, elec. built-ins, fenced patio, 3 yrs old, xln cndn. For appointment, Jacobsen, 487-0792.

By owner, 4 bedroom, 1½ story on over-size wooded lot, fireplace, Dickinson. 483-5316 or 534-2793 after 6:00 p.m.

Clear Lake City 3-2-2, formal living and dining rooms, large family room, built-ins, carpets, drapes, 1769 sq ft, cul de sac, assume 6% or refinance. Spurlin, 488-3745.

League City, Newport, 2-story, 4-2½-2, formal living and dining, fenced, equity \$4600, balance \$21,200, \$181/mo, 6½ VA. Bassham, 932-3796.

10-acre Hill Country homesite on RR12 near Wimberley, wooded, \$5295. Low down, \$55/month. Davis, 877-1155.

Pasadena 3-1½-1 frame, drive-thru garage, central heat, air units, xln location. Equity and assume 5¼% FHA loan or refinance. Kennedy, 944-3276.

80' x 200' beautifully wooded lot, Dickinson. All utilities. \$4500. Plauché, 474-2660.

PETS

AKC, miniature schnauzers, shots, wormed, champion bloodline. Hoskins, 483-2831.

Siberian huskies, black & white, blue-eyed, beautifully marked, \$150. Joerns, 591-3330.

AKC registered Airedale, 8 mos. old, friendly, all shots completed, \$50. Parker, 591-2710.

Exotic Basenji puppies, odorless and barkless, red and white, AKC, \$125. Roberts, 485-3862 after 6:00 p.m.

Free: Good rabbit hound. Also will sell English Setter w/papers. Reasonable offer or trade for stereo components. Neily, GR 2-1269.

Black poodles, miniature, AKC registered, 8 weeks, \$25. 944-0837.

Free kittens: 4 healthy, black, female kittens, blue eyes, weaned by end of May. Faget, 534-4946.

WANTED

Need alto sax band instrument, intermediate model. Requires inspection/approval by band director. Hehn, 481-0069.

Baby stroller and high chair. Richeson, 482-1064.

Gasoline powered lawn edger. Thompson, 932-3653.

Crib, port-a-crib, bathinette, etc. Martin, 944-3149.

Gardiner Honored

Robert A. Gardiner, Engineering and Development's Assistant Director for Electronic Systems, was recently elected as a fellow in the Institute of Electrical and Electronic Engineers (IEEE).

In the announcement by IEEE of the honor, Gardiner was cited particularly "for contribution and leadership in the development of manned spacecraft guidance, navigation and control systems."

Apollo 14 Crew To Visit Paris

Apollo 14 Astronauts Alan B. Shepard, Jr., Edgar D. Mitchell, and Stuart A. Roosa will visit the Paris Air Show from May 30 to June 6. In addition to a number of activities related to the Air Show, the astronauts have accepted invitations for appearances at several cities in France.

Shepard, Mitchell, and Roosa will participate in the 29th International Salon of Aeronautics and Space, visit aerospace facilities in Bretigny, Toulouse and Salon-de-Provence, and attend a reception to be given by the Mayor of Dijon.